

## ABSTRACT

There is provided a radio communication apparatus and a radio communication method in which  
5 a transmission mixer and a reception mixer are shared  
in mobile communication systems each having a  
different frequency band without using frequency  
switching means for frequency synthesizers to make  
it possible to improve miniaturization of the  
10 apparatus. At the transmitting side, transmission  
IF values of  $f_{11}$  and  $f_{12}$  ( $f_{11}=f_{12}$ ) are set to  
frequencies close to  $(f_{t1}-f_{t2})/2$ , and a lower local  
configuration is formed in the first system and an  
upper local configuration is formed in the second  
15 system using the frequency lower than that of the  
first system. At the receiving side, values of  $f_{41}$   
and  $f_{42}$  ( $f_{41}=f_{42}$ ) are set to frequencies close to  
 $(f_{r1}-f_{r2})/2$ , a lower local configuration is formed  
in the first system and an upper local configuration  
20 is formed in the second system using the frequency  
lower than that of the first system. In addition,  
here,  $f_{t1}$ ,  $f_{11}$ ,  $f_{r1}$ , and  $f_{41}$  are transmission  
frequency, transmission intermediate frequency,  
reception frequency, and reception intermediate  
25 frequency in the first system, respectively.  
Similarly,  $f_{t2}$ ,  $f_{12}$ ,  $f_{r2}$ , and  $f_{42}$  are transmission  
frequency, transmission intermediate frequency,

reception frequency, and reception intermediate frequency in the second system, respectively.